January 1997

Mathematics 30

Grade 12 Diploma Examination

Alberta
EDUCATION

January 1997

Mathematics 30

Grade 12 Diploma Examination

Description

Time: 2.5 h. You may take an additional 0.5 h to complete the examination.

This is a **closed-book** examination consisting of

- 40 multiple-choice questions and 9 numerical-response questions, of equal value, worth 70% of the examination
- 3 written-response questions, of equal value, worth 30% of the examination

A tear-out formula sheet and a z-score page are included in this booklet.

All graphs on this examination are computer-generated.

Instructions

- Consider all numbers used in the questions to be **exact** numbers and not the result of a measurement.
- Fill in the information required on the answer sheet and the examination booklet as directed by the presiding examiner.
- You are expected to provide your own scientific calculator.
- Carefully read the instructions for each part before proceeding.
- The presiding examiner will collect your answer sheet and examination booklet and send them to Alberta Education.
- Do not fold the answer sheet.

Note: *The perforated pages at the back of this booklet may be torn out and used for your rough work.* ***No marks*** *will be given for work done on the tear-out pages.*

Multiple Choice

- Read each question carefully and decide which of the choices completes the statement or answers the question.
- Locate that question number on the separate answer sheet provided and fill in the circle that corresponds to your choice.

Example

This diploma examination is for the subject of

A. biology
B. physics
C. chemistry
D. mathematics

Answer Sheet

Ⓐ Ⓑ Ⓒ ●

- **Use an HB pencil only.**
- If you wish to change an answer, erase **all** traces of your first answer.

Numerical Response

- Read each question carefully.
- Record your answer on the answer sheet provided by writing it in the boxes and then filling in the corresponding circles.
- **Enter the first digit of your answer in the left-hand box and leave any unused boxes blank.**
- Use an HB pencil only.
- If you wish to change an answer, erase **all** traces of your first answer.

Sample Questions and Solutions

Correct to the nearest tenth of a radian, 40° is equal to _____ rad.

$40^\circ = 0.6981317008\ldots$ rad

Record 0.7 on the answer sheet →

For the arithmetic series $-8 + (-5) + (-2) + \ldots + (85)$, the number of terms is _____.

$85 = -8 + (n - 1)(3)$

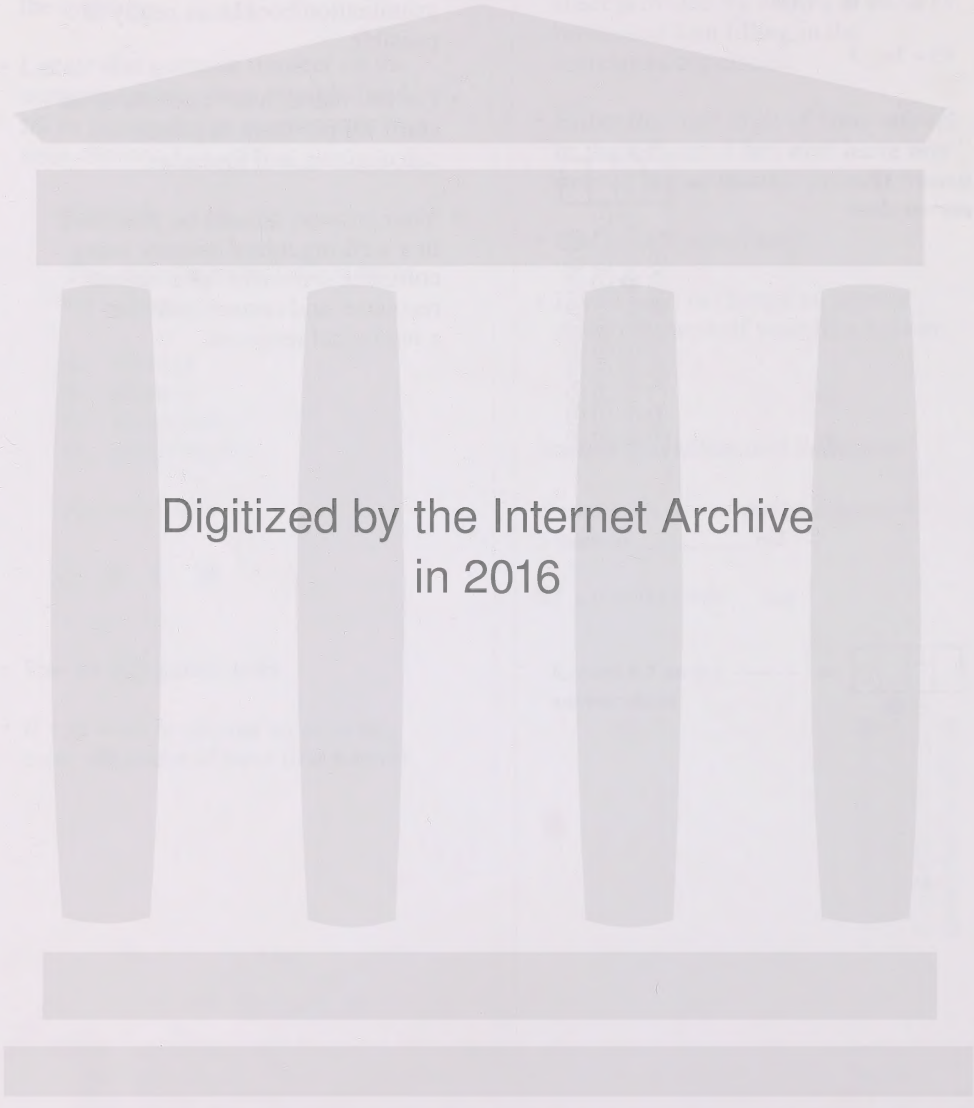
$93 = 3n - 3$

$n = 32$

Record 32 on the answer sheet →

Written Response

- Read each question carefully.
- Write your answers in the examination booklet as neatly as possible.
- For full marks, your answers **must show all** pertinent explanations, calculations, and formulas.
- Your answers **should be** presented in a well-organized manner using complete sentences for a written response, and correct units for a numerical response.



1. An example of an **integral** polynomial function $P(x)$ that has a graph with x-intercepts $\frac{1}{3}$, 2, and -3 is

A. $P(x) = \left(x + \frac{1}{3}\right)(x + 2)(x - 3)$

B. $P(x) = \left(x - \frac{1}{3}\right)(x - 2)(x + 3)$

C. $P(x) = (3x + 1)(x + 2)(x - 3)$

D. $P(x) = (3x - 1)(x - 2)(x + 3)$

Use the following information to answer the next question.

The following table was used to graph a third-degree polynomial function, $P(x)$.

x	-2	-1	0	1	2	3
$P(x)$	-16	0	4	2	0	4

2. The third-degree polynomial function that was graphed was

A. $P(x) = (x - 2)(x + 1)^2$

B. $P(x) = (x - 2)^2(x + 1)$

C. $P(x) = (x + 2)^2(x - 1)$

D. $P(x) = (x + 2)(x - 1)^2$

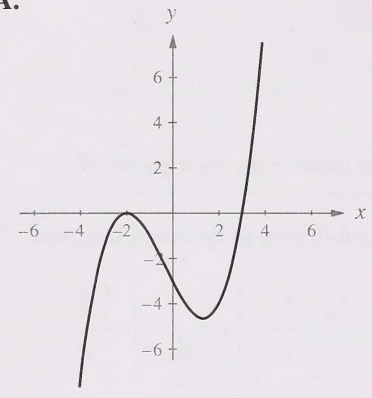
Use the following information to answer the next question.

The function P satisfies the conditions:

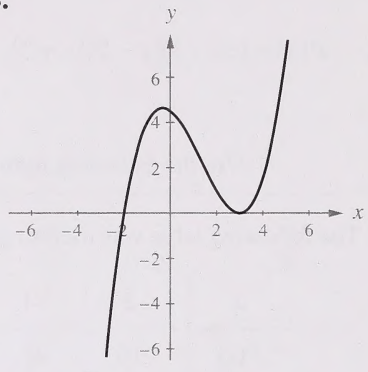
- $P(-3) = 0$
- $P(2) = 0$
- $P(x) \leq 0$ when $x \leq 2$
- $P(x) > 0$ when $x > 2$

3. Which of the following could be the graph of $y = P(x)$?

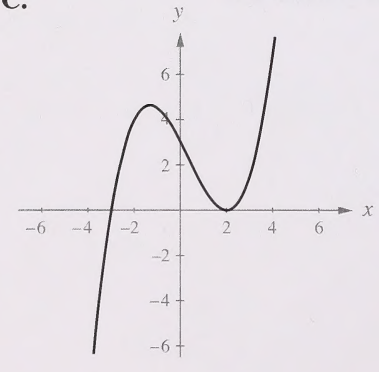
A.



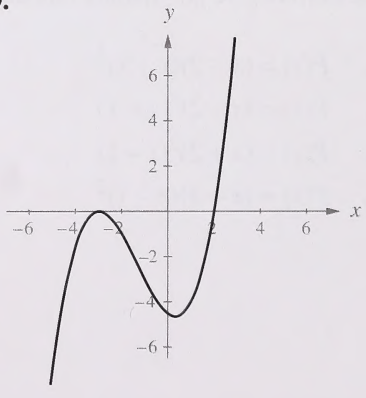
B.



C.



D.



4. A polynomial, $P(x)$, is defined by $P(x) = x^3 - 3x + 18$. If $P(x) = (x + 2)Q(x) + R$, then $Q(x)$ and R, respectively, are

A. $(x^2 - 2x + 1)$ and 16

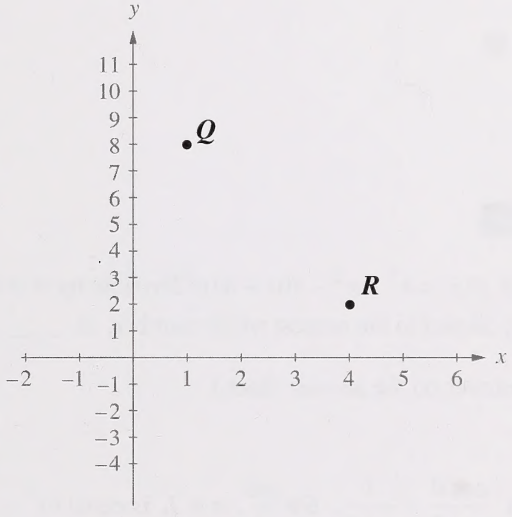
B. $(x^2 - 5x + 28)$ and 0

C. $(x^2 + 2x + 1)$ and 20

D. $(x^2 - 5x + 28)$ and 16

Use the following information to answer the next question.

Suppose $P(x)$ is a third-degree polynomial function. If $y = P(x)$ were graphed, the points $Q(1, 8)$ and $R(4, 2)$ shown below would lie on the graph.



5. Which of the statements about the zeros of $P(x)$ **cannot** be true?

A. $P(x)$ has no zeros between $x = 1$ and $x = 4$.

B. $P(x)$ has one zero of multiplicity 2 between $x = 1$ and $x = 4$.

C. $P(x)$ has two zeros each of multiplicity 1 between $x = 1$ and $x = 4$.

D. $P(x)$ has three zeros each of multiplicity 1 between $x = 1$ and $x = 4$.

6. The product of a third-degree polynomial, $Q(x)$, and a second-degree polynomial, $P(x)$, is the polynomial $H(x)$. The maximum number of x-intercepts on the graph of $y = H(x)$ is

A. 2
B. 3
C. 5
D. 6

7. The points $(-1, 0)$, $(0, 12)$, and $(1, 6)$ lie on the graph of a third-degree polynomial function, P. If the equation of $P(x)$ is divided by $(x - 1)$, then the remainder is

A. –6
B. 0
C. 6
D. 12

Numerical Response

1. The polynomial $P(x) = x^3 - x^2 - 40x + n$ is divisible by $x - 3$.
The value of n, correct to the nearest whole number, is _____ .

(Record your answer on the answer sheet.)

8. The expression $\dfrac{\cos\theta}{\cot\theta} + \dfrac{1}{\csc\theta}$, $\theta \neq \dfrac{n\pi}{2}$, $n \in I$, is equal to

A. $\csc\theta$
B. $2\sin\theta$
C. $2\cot\theta$
D. $\sin\theta + \cos\theta$

9. If $D = (90 + 2C)^\circ$ and $\sin C = \frac{1}{2}$, $0^\circ < C < 90^\circ$, then $\sec D$ is equal to

A. $-\frac{2}{\sqrt{3}}$

B. $-\frac{1}{\sqrt{3}}$

C. $\frac{1}{4}$

D. $\frac{1}{2}$

10. The maximum value of the function $f(\theta) = m\cos\theta + n$, $\theta \in \Re$, where $m > 0$ and $n > 0$, is

A. m

B. n

C. $m + n$

D. $n - m$

11. An expression equal to $\cos\left(\frac{\pi}{2} - x\right)$ is

A. $\sin x$

B. $-\sin x$

C. $\cos x$

D. $-\cos x$

12. The solutions of $2\sin\theta + 1 = 0,\ 0 \le \theta < 2\pi$ are

A. $\frac{\pi}{6}, \frac{5\pi}{6}$

B. $\frac{\pi}{6}, \frac{11\pi}{6}$

C. $\frac{5\pi}{6}, \frac{7\pi}{6}$

D. $\frac{7\pi}{6}, \frac{11\pi}{6}$

Use the following information to answer the next question.

A student was solving the equation

$$2\cos^2\theta + 3\cos\theta - 2 = 0,\ 0 \le \theta < 2\pi.$$

The student's solution was:

$$2\cos^2\theta + 3\cos\theta - 2 = 0$$

$$(2\cos\theta - 1)(\cos\theta + 2) = 0$$

$$2\cos\theta - 1 = 0 \text{ or } \cos\theta + 2 = 0$$

$$\cos\theta = \frac{1}{2}, \quad \cancel{\cos\theta = -2}$$

$$\therefore\ \theta = \frac{\pi}{3}, \frac{5\pi}{3}$$

13. The reason that $\cos\theta = -2$ **must** be rejected is that

A. the domain of $f(\theta) = \cos\theta$ is a subset of the real numbers

B. the domain of $f(\theta) = \cos\theta$ is $-1 \le \theta \le 1$

C. the range of $f(\theta) = \cos\theta$ is $-1 \le \cos\theta \le 1$

D. the range of $f(\theta) = \cos\theta$ is the set of real numbers

Numerical Response

2. A circle has a radius of length 6 cm. If a central angle of this circle subtends an arc 10 cm long, then the measure of the angle, correct to the nearest tenth of a degree, is _____ °.

(Record your answer on the answer sheet.)

Numerical Response

3. If $\tan\theta = \frac{12}{5}$, $0 < \theta < \frac{\pi}{2}$, then the value of $\cos\theta$, correct to the nearest hundredth, is _____ .

(Record your answer on the answer sheet.)

14. The expression $\log_a\left(\frac{1}{a^b}\right)$, where $a > 0$, is equal to

A. $-b$

B. b

C. a^b

D. a^{-b}

15. The graphs of $y = \log_3(x-1) + 1$ and of $y = \log_3(2x+1)$ intersect at a point. An equation that could be used to find this point of intersection is

A. $\log_3[(2x+1)(x-1)] = 1$

B. $\log_3 \frac{(2x+1)}{(x-1)} = 1$

C. $\log_3(2x+1)\log_3(x-1) = 1$

D. $\frac{\log_3(2x+1)}{\log_3(x-1)} = 1$

16. If $\log_a 16 = 2$ and $\log_8 b = 2$, then $\log_2(ab)$ equals

A. 256

B. 128

C. 10

D. 8

17. If $\log_4(2y + x) = 2$, $(2y + x) > 0$, then y in terms of x is

A. $\frac{16 - x}{2}$

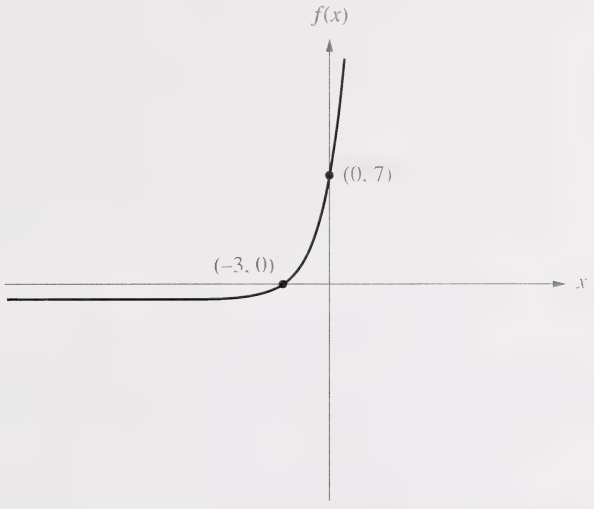
B. $\frac{8 - x}{2}$

C. $\frac{8 + x}{2}$

D. $\frac{16 + x}{2}$

Use the following information to answer the next question.

The partial graph of the exponential function $f(x) = 2^{x+3} - 1,\ x \in \Re$, is shown below.



18. If $g(x)$ is the inverse of $f(x)$, then the range of $g(x)$ is

A. $g(x) \geq -1$
B. $g(x) > 0$
C. $g(x) > 1$
D. $g(x) \in \Re$

19. If $\left(\sqrt{2}\right)^{3x-1} = (4)^{x+3}$, then x is equal to

A. -13

B. -4

C. 2

D. 7

Use the following information to answer the next question.

Radioactive Decay

$$m(t) = m_0\left(\frac{1}{2}\right)^{\frac{t}{h}}$$

where $m(t)$ = mass of radioactive material at time t (in minutes)

m_0 = original mass

t = time in minutes

h = half-life in minutes

20. After 204 minutes, a sample of Plutonium-232 decayed to $\frac{1}{64}$ of its original mass. The half-life of Plutonium-232 is approximately

A. 0.3 minutes

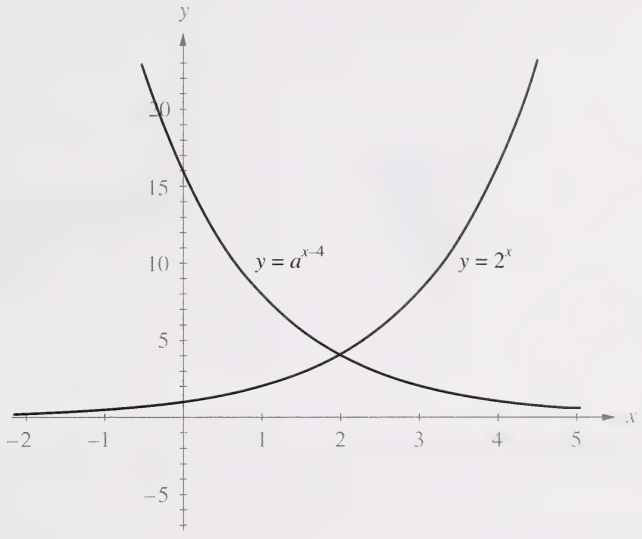
B. 6 minutes

C. 34 minutes

D. 1 224 minutes

Use the following information to answer the next question.

The graphs of $y = 2^x$ and $y = a^{x-4}$ intersect when $x = 2$, as shown below.



Numerical Response

4. Given that a is a positive number, the value of a, correct to the nearest tenth is _____ .

(Record your answer on the answer sheet.)

Use the following information to answer the next question.

A conical paper cup is partially filled with lemonade and then capped. It is then tilted until the plane of the surface of the lemonade intersects the vertex of the cone, as shown in figure 2.

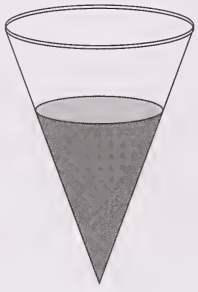


Figure 1

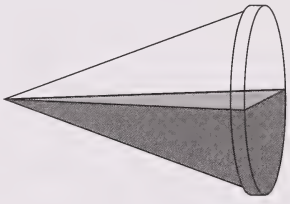


Figure 2

21. The intersection of the plane surface of the lemonade and the paper cup as shown in figure 2 is

A. a line segment

B. a point

C. parallel line segments

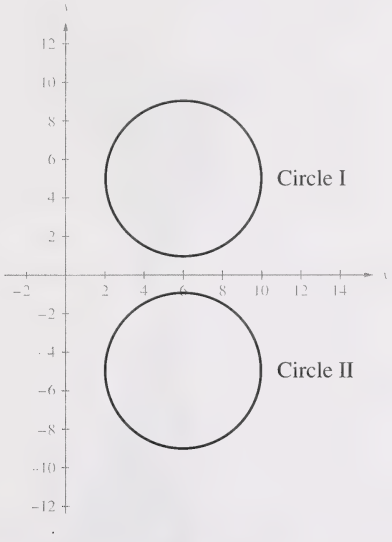
D. intersecting line segments

Use the following information to answer the next question.

A student chose two sets of values for the parameters in the equation

$$Ax^2 + Cy^2 + Dx + Ey + F = 0.$$

The graphs of the two equations are the two circles shown below.



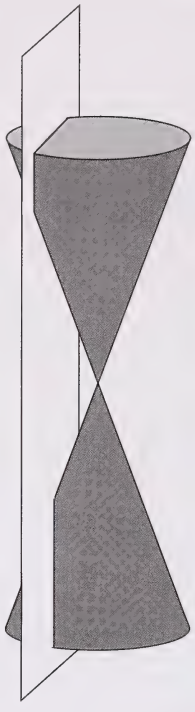
The student finds that circle II is the reflection of circle I in the x-axis.

22. If circle II can be obtained by changing only one coefficient in the equation of circle I, then that coefficient is

A. A
B. C
C. D
D. E

Use the following information to answer the next question.

A plane intersects a double-napped cone parallel to the axis of symmetry but does not pass through the vertex, as shown below.



23. Each point, P, of the intersection of the cone and the plane satisfies which one of the following conditions?

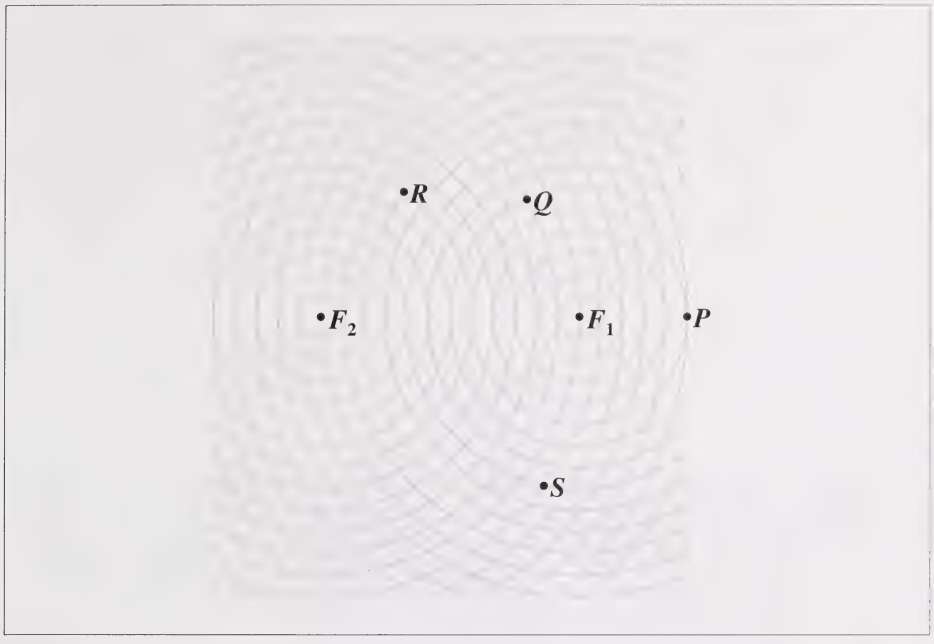
A. The difference of the distances from P to two fixed points in the plane is constant.

B. The sum of the distances from P to two fixed points in the plane is constant.

C. The distances from P to a fixed point in the plane and to a fixed line in the plane are equal.

D. The distance from P to a fixed point in the plane is constant.

Use the following information to answer the next question.



24. In the diagram above, the points labelled F_1 and F_2 are the foci of a hyperbola with a constant difference of 5. F_1 and F_2 are also the foci of an ellipse with a constant sum of 17. The point that lies on **both** curves is labelled

A. P
B. Q
C. R
D. S

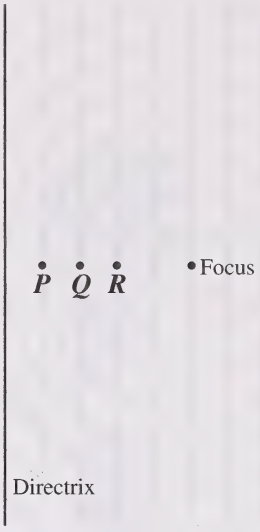
---

25. The eccentricity of a hyperbola is 2.5. If a point on the hyperbola is 10 units from the focus, then how many units is this point from the directrix?

A. 25 units
B. 4 units
C. 1 unit
D. 0.25 units

Use the following information to answer the next question.

The focus, F, and directrix of a quadratic relation are shown below.



26. If an ellipse has an eccentricity of $\frac{3}{4}$, then a point that lies on it will be between

A. points P and Q
B. points Q and R
C. point R and the focus
D. point P and the directrix

Numerical Response

5. A parabola has a directrix of $x = 10.4$ and focus at $(6, 0)$. Correct to the nearest tenth, the x-intercept of this parabola is _____ .

(Record your answer on the answer sheet.)

27. Using sigma notation, the arithmetic series $6 + 8 \ldots + t_{40}$ can be expressed as

A. $\sum_{n=1}^{40} 6\left(2^n - 1\right)$

B. $\sum_{n=1}^{40} 6(2)^{n-1}$

C. $\sum_{n=1}^{40} (4 + 2n)$

D. $\sum_{n=1}^{40} \left(n^2 + 5n\right)$

28. Three consecutive terms of an arithmetic sequence are t_1, t_2, and t_3. A second sequence is formed by reversing the first sequence to obtain t_3, t_2, t_1. If the common difference of the first sequence is d, then the common difference of the second sequence is

A. $\frac{1}{d}$

B. $-\frac{1}{d}$

C. d

D. $-d$

29. The general term of an arithmetic sequence is $t_n = 3n + 4$, where $n \geq 1$. If the first n terms of the sequence are summed, then S_n is equal to

A. $\frac{3^n - 1}{2}$

B. $\frac{7(3^n - 1)}{2}$

C. $\frac{3n^2 + 5n}{2}$

D. $\frac{3n^2 + 11n}{2}$

30. The sum of the first n terms of an arithmetic sequence is $S_n = 6n^2 + 9n$. The fifth term, t_5, of the sequence is

A. 51
B. 63
C. 132
D. 195

31. For a geometric sequence, $t_7 = 5x + 2$ and $t_{10} = x - 23$. If the common ratio is 2, the numerical **value of** t_{10} is

A. –26
B. –24
C. –3
D. –1

32. A square picture measures 10 cm on each side. A photocopier is set to produce a copy with the length of each side reduced to 80% of the original. Each successive image is photocopied. After 8 reductions, the area of the last image of the picture, correct to the nearest tenth, is

A. $16.8\ \text{cm}^2$

B. $4.4\ \text{cm}^2$

C. $2.8\ \text{cm}^2$

D. $1.7\ \text{cm}^2$

Numerical Response

6. A sequence is defined by

$$t_1 = 24$$
$$t_{n+1} = \frac{1}{2}t_n,\ n \geq 1,\ n \in N$$

The sum of the first seven terms, correct to the nearest tenth, is _____ .

(Record your answer on the answer sheet.)

33. There are 4 different video cassettes and their 4 corresponding video cases lying on the floor. A young child who cannot read randomly puts a video in each case. What is the probability the child put the correct video in each box?

A. $\frac{1}{4!}$

B. $\frac{2}{4!}$

C. $\frac{1}{8!}$

D. $\frac{4!}{8!}$

34. A committee of 3 is to be selected from 3 Grade 10 students and 4 Grade 11 students. If one particular Grade 10 student must be chosen, then the number of committees possible is

A. 15

B. 20

C. 45

D. 210

35. The sum of the coefficients of the terms in the expansion of $(x+1)^7$ is

A. 8

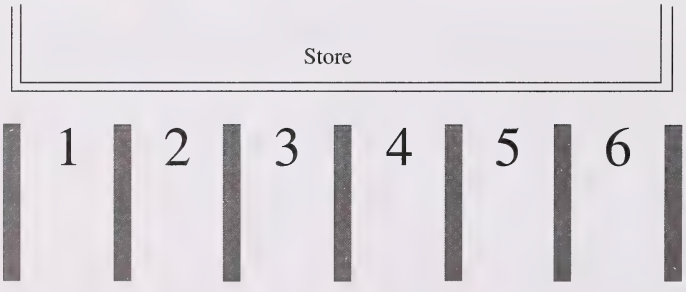
B. 64

C. 128

D. 256

Use the following information to answer the next question.

A small store has a parking lot containing 6 numbered parking stalls, as shown below.



36. The maximum number of different ways that 4 different cars can be parked facing the store in the parking lot is

A. 15

B. 24

C. 360

D. 1 296

37. The value of the expression $\sum_{n=2}^{6} {}_6C_n$ is

A. 64

B. 57

C. 32

D. 16

Numerical Response

7. In a puzzle book, one of the puzzles is to unscramble the letters **mttioceme** to obtain a meaningful word. Assume it takes an average of 10 seconds to make a new arrangement and that no identical arrangement is repeated. To the nearest hour, the maximum number of hours it would take to write all the possible arrangements of the letters **mttioceme** is _____ .

(Record your answer on the answer sheet.)

Numerical Response

8. A candy vending machine has a button for each of the 26 letters of the alphabet and for each digit, 0 to 9. To buy a certain type of candy, you must enter a letter followed by a number. The **maximum** number of different types of candy that this vending machine could dispense is _____ .

(Record your answer on the answer sheet.)

38. The scores of a test are found to be normally distributed with a mean of 32 and a standard deviation of 4. If a student's test paper is selected at random from this sample, the probability that the score on the paper is between 34 and 42 is

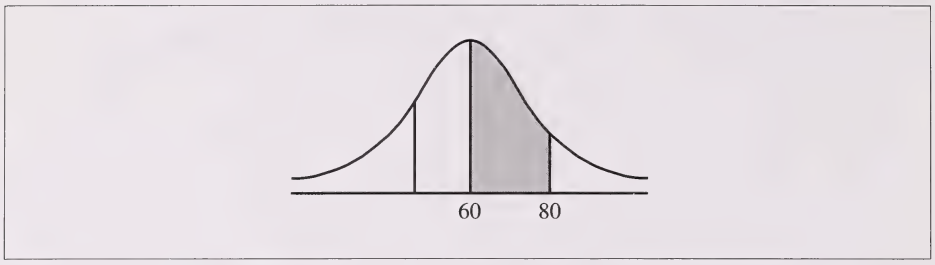
A. 0.6853

B. 0.4987

C. 0.4772

D. 0.3023

Use the following information to answer the next question.



39. In the sketch of a normal distribution, the shaded area is 0.3944 for a score of 80. If the mean score is 60, then the standard deviation is

A. 7.9

B. 12.4

C. 16.0

D. 20.0

---

40. The mean for a set of N scores is μ. If k is subtracted from each score in the set, then the mean will be

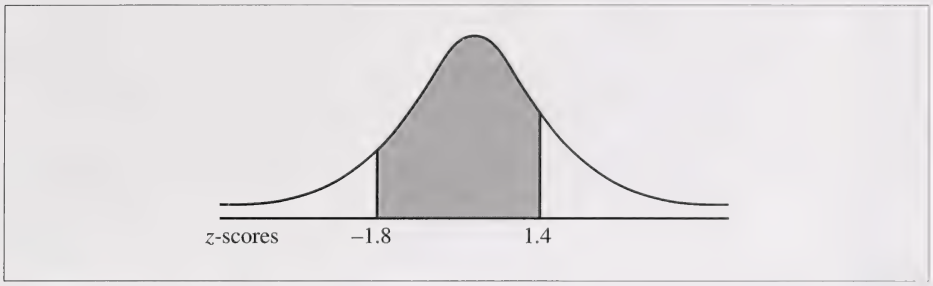
A. $\mu - k$

B. $\mu - \frac{k}{N}$

C. $\mu - Nk$

D. μ

Use the following information to answer the next question.



Numerical Response

9. The shaded area under the standard normal curve, correct to the nearest hundredth, is _____ .

(Record your answer on the answer sheet.)

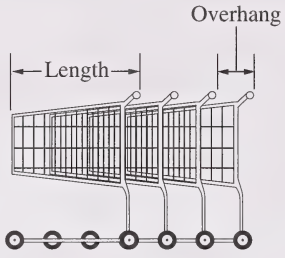
The written-response questions follow on the next page.

For Department Use Only

Written Response — 10%

1. A grocery store manager is reviewing a design for a new grocery store. The space required to store shopping carts needs to be reviewed.

A shopping cart is 1.00 m long and 0.50 m wide. When shopping carts are "nested" together, there is a 0.25 m overhang, as shown below.



—adapted with permission from *Mathematics Teacher*, Dec., 1995 by Ann Shannon and Judith Zawojewski.

- Determine the total length of 3 shopping carts nested together.
- Determine an expression for the total length of n nested shopping carts.
- Determine the number of shopping carts nested together, if the length of the nested carts is 10.00 m.

Written-response question 1 continues on the next page.

- The store manager wants to be able to store the maximum number of nested carts possible in an open-ended rectangular shed with dimensions 8.20 m by 4.30 m. The nested carts must all be sheltered by the roof of the shed. By calculating the number of nested carts that could be stored in each of the design options, determine whether the store manager should have the design made with a short side left open or a long side left open. Justify your steps in your calculations.

Written-response question 2 begins on the next page.

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Written Response — 10%

2. A student planned to investigate the graph of

$$Ax^2 + Cy^2 + Dx + Ey - 72 = 0.$$

Parameter A is randomly selected from $\{1, 2, 3\}$.
Parameter C is randomly selected from $\{-3, -2, 4\}$.
Parameter D is randomly selected from $\{-1, 0, 1, 2\}$.
Parameter E is randomly selected from $\{-2, -1, 0, 1\}$.

The teacher confirmed that these selections of parameters will produce distinct, non-degenerate graphs.

- Determine the number of distinct equations using all possible given values of A, C, D, and E.
- Determine the probability that the graph produced is any conic centred at the origin.
- From the given values of A, C, D, and E, **explain** which values could be used to generate an ellipse.

Written-response question 2 continues on the next page.

Written-response question 3 begins on the next page.

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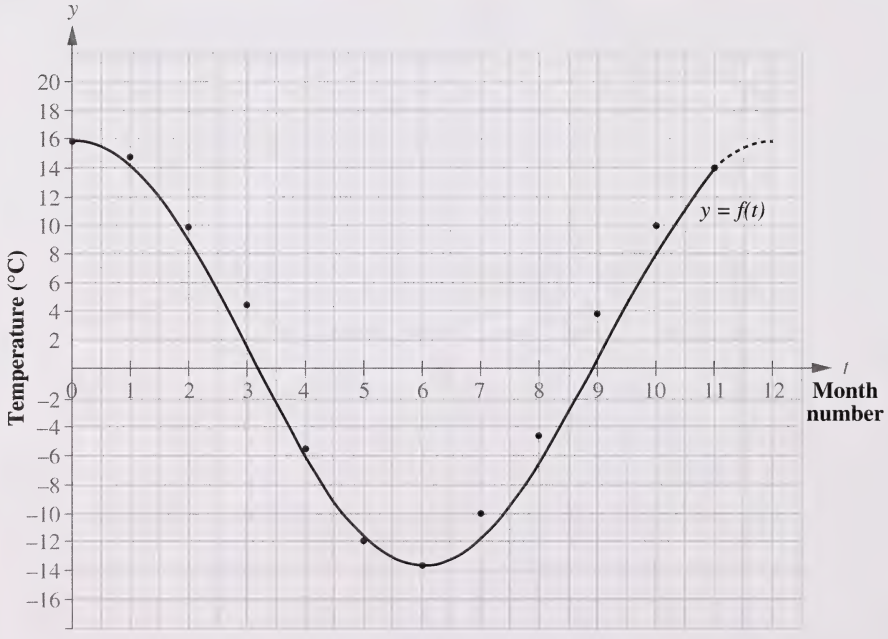
Written Response — 10%

3. The table below gives the monthly **mean** temperature recorded over a 30-year period in Red Deer, Alberta.

Month	Month Number	Temp. (° C)	Month	Month Number	Temp. (° C)
July	0	15.8	Jan	6	−13.5
Aug	1	15.0	Feb	7	−10.0
Sept	2	9.9	Mar	8	−4.7
Oct	3	4.6	Apr	9	3.7
Nov	4	−5.3	May	10	9.9
Dec	5	−11.9	June	11	14.0

The graph of a sinusoidal function, f, with maximum value 15.8 in July, and minimum value −13.5 in January, was compared with the measured data.



—from *Canadian Climate Normals*, 1961–1990, v.2, *Prairie Provinces*, Environment Canada

Written-response question 3 continues on the next page.

- Determine the amplitude and the period of the sinusoidal function.

- Determine an equation of the sinusoidal function, f, in the figure. Write the equation in the form $y = a \cos bt + d$.

- Assume that temperatures over the next 30 years will again be modelled by a sinusoidal function with the same period. If the monthly mean temperatures have all risen as a result of global warming, what changes, if any, would you predict to the amplitude and vertical displacement of the sinusoidal function? (These predictions are independent of each other.) Explain your predictions.

Space for written-response question 3 continues on the next page.

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You have now completed the examination.
If you have time, you may wish to check your answers.

Mathematics 30 Formula Sheet

The following information may be useful in writing this examination.

- The roots of the quadratic equation $ax^2 + bx + c = 0$ are

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- The distance between two points (x_1, y_1) and (x_2, y_2) is

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Quadratic Relations

- $e = \dfrac{|\overline{PF}|}{|\overline{PD}|}$

Trigonometry

- arc length $a = r\theta$
- $\sin^2 A + \cos^2 A = 1$
- $1 + \tan^2 A = \sec^2 A$
- $1 + \cot^2 A = \csc^2 A$
- $\csc A = \dfrac{1}{\sin A}$
- $\sec A = \dfrac{1}{\cos A}$
- $\cot A = \dfrac{\cos A}{\sin A}$
- $\sin(A + B) = \sin A \cos B + \cos A \sin B$
- $\sin(A - B) = \sin A \cos B - \cos A \sin B$
- $\cos(A + B) = \cos A \cos B - \sin A \sin B$
- $\cos(A - B) = \cos A \cos B + \sin A \sin B$

Permutations and Combinations

- ${}_nP_r = \dfrac{n!}{(n-r)!}$
- ${}_nC_r = \dfrac{n!}{r!(n-r)!}$
- In the expansion of $(x + y)^n$, the general term is $t_{k+1} = {}_nC_k x^{n-k} y^k$

Sequences and Series

- $t_n = a + (n-1)d$
- $S_n = \dfrac{n[2a + (n-1)d]}{2}$
- $S_n = n\left(\dfrac{a + t_n}{2}\right)$
- $t_n = ar^{n-1}$
- $S_n = \dfrac{a(r^n - 1)}{r - 1}$, $r \neq 1$
- $S_n = \dfrac{rt_n - a}{r - 1}$, $r \neq 1$

Exponential and Logarithmic Functions

- $\log_a mn = \log_a m + \log_a n$
- $\log_a \dfrac{m}{n} = \log_a m - \log_a n$
- $\log_a m^n = n \log_a m$

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$$z = \frac{x - \mu}{\sigma}$$

Areas under the Standard Normal Curve

z	0	1	2	3	4	5	6	7	8	9
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0754
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2258	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2518	0.2549
0.7	0.2580	0.2612	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2996	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998
3.5	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.6	0.4998	0.4998	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.7	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.8	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.9	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000

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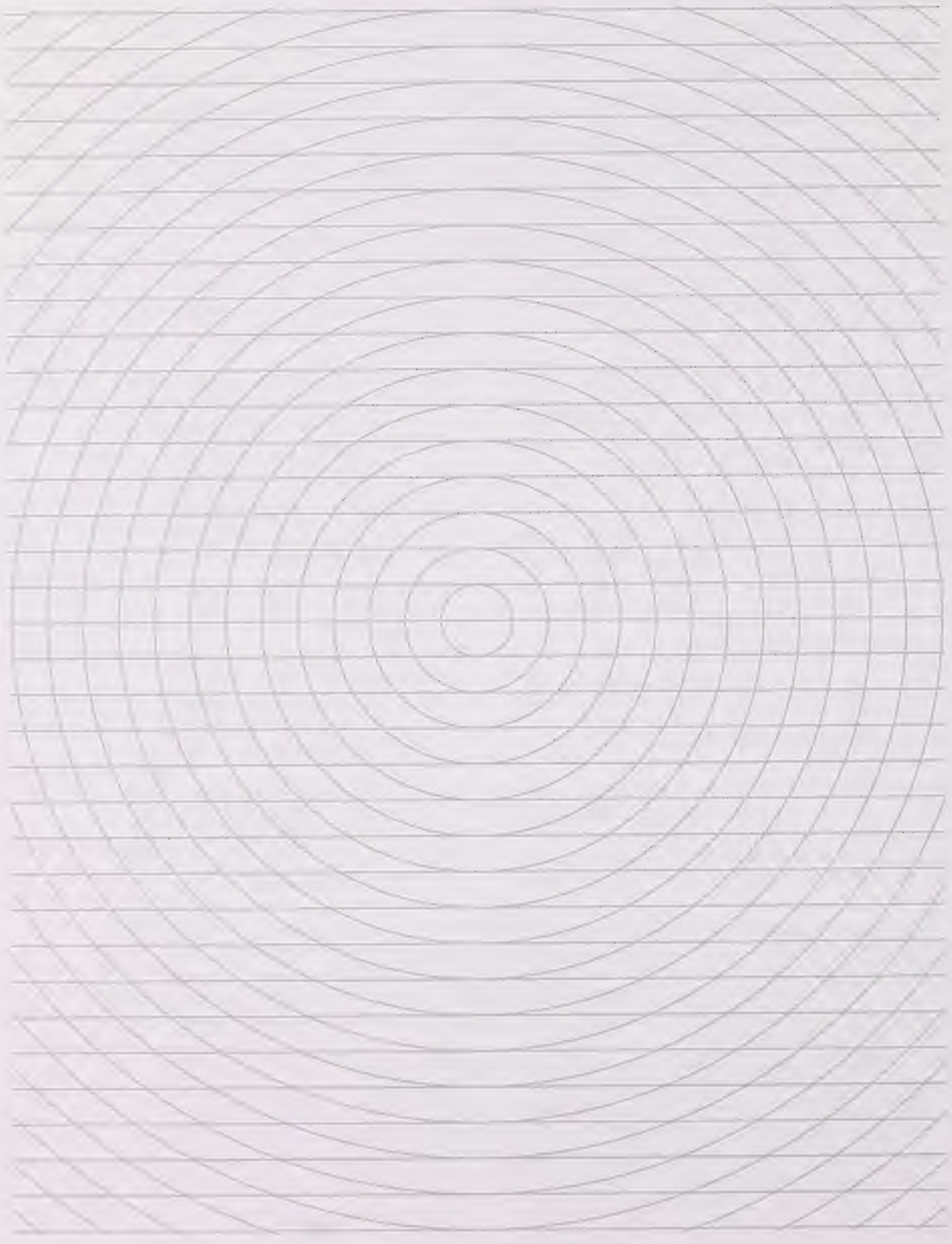

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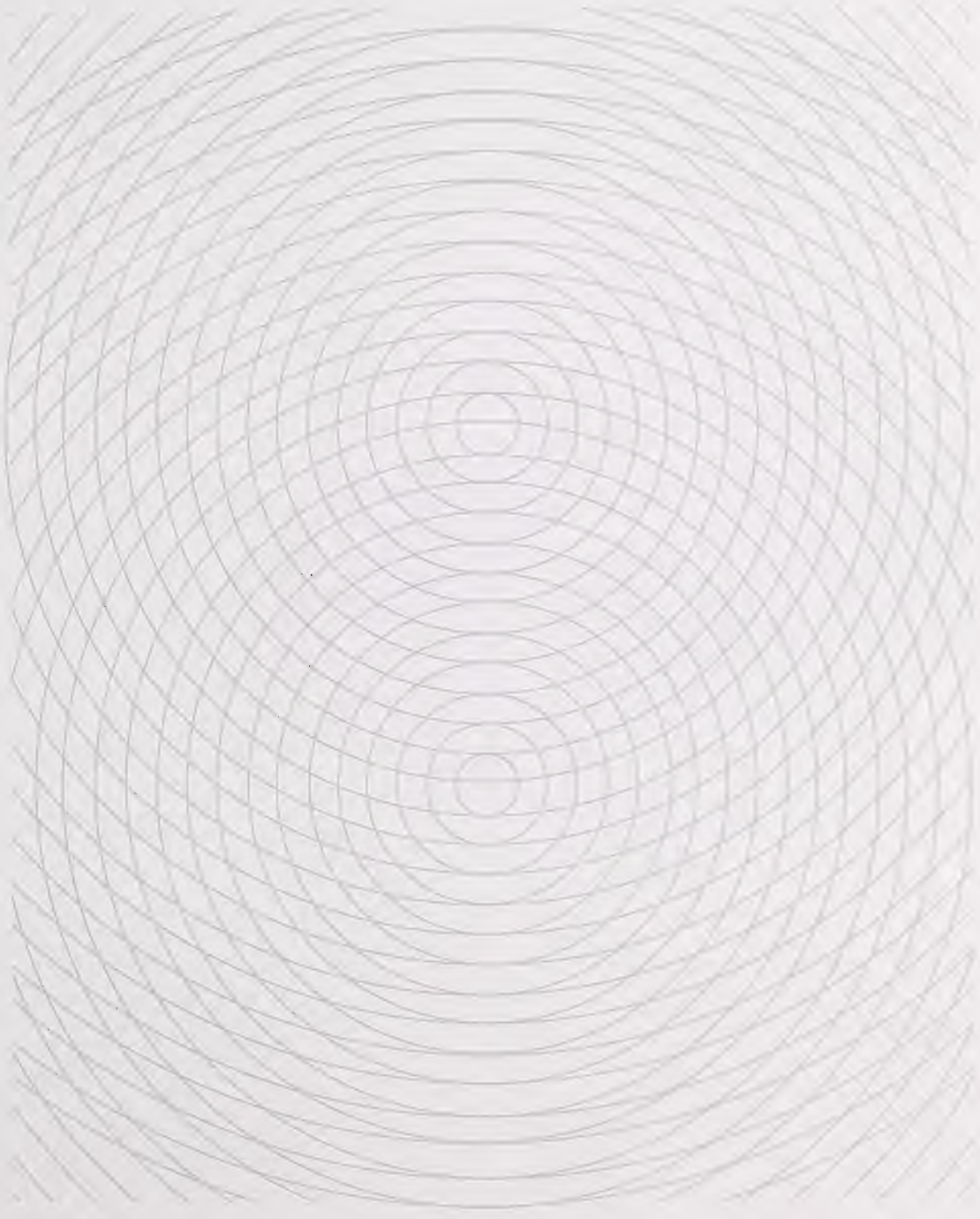

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